December 22nd 1954

Dear Dr Knight,

Since I last wrote t you, I have made numerous attempts to orientate both the specimens you sent me. I am afraid I am now convinced that the trouble is due to their having got too dry in transit. They behave, in fact, very like normal TMV which has been dried and re-wetted.

Straight end-to-end aggregation, such as probably takes place in all solutions, I believe makes subsequent orientation of the material easier. But it seems that, on drying, there is a more irregular and irreversible aggregation of the particles, which is shown by the modification of the physical properties on re-wetting. The substance stays in gel form at much greater dilution, and its birefringence is much lower. The dilute solution seems to show less birefringence of flow.

In confirmation of this explanation of my failure to orientate your specimens, I find that I can get slightly improved orientation by adding more water and stirring long and vigorously before letting the solution into the capillary tube. But the orientation is still not comparable with that obtained from normal TMV solutions of material which has not been dried, and therefore still does not give satisfactory X-ray diagrams.

Both the CV4 and the TMV-I would, I am sure, be very valuable materials for comparison with normal TMV, and if you and Dr Fraenkel-Conrat ever have any more to to spare I should be extremely grateful if you would let me make another attempt. It would be best if you would send them in the form of a rather concentrated solution (e.g. in sealed glass tubes). If the solution you send is too dilute for direct use, I should have no difficulty in concentrating it to the required consistency.

TMV seems to be capable of preservation indefinitely in the form of concentrated solution. Is this also true of CV4?

Best wishes,

Yours sincerely,